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Semi-Arid Food Grain Research and Development

UNION AFRICAINE
Commission Scientifique, Technique et de la Recherche
Recherche et Développement des Cultures Vivrières
dans les Zones Semi-Arides

AU/SAFGRAD REPORT ON THE IMPLEMENTATION OF PROGRAMMES

2001 - 2002

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INTRODUCTION

The overall goal of the Semi-Arid Food Grain Research and Development (SAFGRAD) Programme of the African Union at its inception was to assist its member countries attain food security in a sustainable manner in the semi-arid tropics of the continent.

The specific objectives set for the programme are as follow:

- i. To generate and promote the transfer and adoption of technologies;
- ii. To enhance agricultural research and development capabilities of Member states through short and long term training;
- iii. To improve the production and productivity of traditional farming systems, with particular emphasis to food grain;
- iv. To facilitate the dissemination and exchange of improved germplasms and technical information;
- v. To foster a dynamic inter-African research cooperation;
- vi. To strengthen linkages between research and extension in participating Member states.

The 2001/2002 SAFGRAD Coordination Office work plan includes:

(1) Implementation and monitoring of on-going activities: this includes organization of steering committee meetings, liaison with funding agencies, funds disbursement to approved projects, monitoring visits to project sites, progress reports, annual technical reports, financial reports, etc.

(2) Development of new project proposals: in collaboration with National Agricultural Research Systems, identify new priority areas for agricultural research and technology transfer; draft concept notes; identify potential donors and submit concepts notes; follow up of the concept notes in the pipeline; eventually recruit consultants for writing project proposals.

(3) Development of a communication strategy for OAU/SAFGRAD: development of a SAFGRAD Vision and Mission statement paper; development of brochures; meeting with NARS, donors, and farmers representatives; meetings with Officials from the host country; participation to regional and sub-regional meetings in the area of agricultural research and technology transfer.

A very significant proportion of the activities planned for the fiscal year 2001/2002 has been achieved or is under implementation. These activities will be reported below under two headings, those funded mainly through the direct subvention received from OAU regular budget, and those funded mainly from extra-budgetary funds (the largest part).



REPORT ON THE IMPLEMENTATION OF ACTIVITIES FUNDED THROUGH SUBVENTION FROM OAU REGULAR BUDGET

A.1. Development of new proposals

The following concept notes or proposals have been developed and submitted to donors:

1. Promoting Cowpea as a Cash and Soil Regenerating Crop in the Dry Lands of Sub-Saharan Africa: Linking Technical Options with Technology Transfer and Market Development Strategies. Concept note submitted to IFAD; in the pipeline.
2. Creation of an Africa Forum for Dry Lands Development; concept note and project document finalized in collaboration with the UNDP/Dry Land Development Center. Project document being included by UNDP/DDC in its programme for funding.
3. Africa Initiative for Seed Development. Interested donors are being sought.
4. Strengthening women economic capacity and improving food security: a special initiative for the enhancement of opportunities for women in poor rural and peri-urban communities of Africa. Proposal revised. Interested donors are being sought.
5. Promotion of sustainable agriculture in semi-arid zones of west and central Africa (2002 - 2004). Project proposal submitted to ADB.

A.2. SAFGRAD communication strategy

A vigorous communication strategy is vital to SAFGRAD future both in terms of visibility of its achievements, resource mobilization and dialog with its stakeholders and partners. An important part of activities included in the 2001/2002 work plan were not fully achieved particularly due to lack of resources.

1. New information technologies: During the fiscal year, personal e-mail accounts and direct access to e-mail and internet have been established for all scientific and managerial staff. Possibilities for establishing a Web site for SAFGRAD have been investigated and evaluated. The Web site could be operational as soon as resources are available.
2. A SAFGRAD Vision and Mission paper has been developed with assistance from a consultant. The document presents SAFGRAD vision, achievements as well as present programmes and partnership strategy. It is not yet published due to lack of funds.
3. A small SAFGRAD brochure in English and French, presenting briefly OAU-STRC/SAFGRAD, its mission and programmes has been published and widely disseminated.
4. SAFGRAD staff has participated to technical regional meetings, to meetings with Officials from the Government of Burkina Faso, host country and also tried to maintain contact with African Ambassadors posted in Ouagadougou, with sister regional institutions and donors representatives.

B. REPORT ON THE IMPLEMENTATION OF ACTIVITIES FUNDED THROUGH EXTRA BUDGETARY RESOURCES

SAFGRAD activities are mainly funded by various donors through grant agreements. The current active programmes are funded by the United States Agency for International Development (USAID), African Development Bank, International Development Research Center/ Micronutrient Initiative (IDRC/MI) and the Republic of Korea.

B.1. Title: Transfer and Commercialization of Agricultural Technologies Program

Objectives:

- Identify viable, more productive, and more promising technologies that could effectively be delivered to end users to enhance micro-enterprise development,
- Foster linkages and partnerships between "stakeholders" including public and private research institutions and technology users, such as farmers, development and marketing agencies, private sector NGOs, and traders,
- Stimulate demand-driven research and enhance the transformation of agricultural technologies into value-added products,
- Facilitate women's participation in agribusiness, technology transfer and commercialization for food security and nutrition enhancement,
- Facilitate exchange of experiences among countries and micro-entrepreneurs,
- Document experiences and lessons learned in technology transfer and commercialization.

i) Activities: The on-going activities emphasizes the backstopping of grassroot organizations in the production and commercialization of quality seed of potato, peanut and cereal as well as the processing of various fruits and legumes into value added products. Activities include training in technical, managerial and leadership skills and the administration of grants for the implementation of the projects.

Participating Countries: Burkina Faso, Ghana, Mali, Senegal and Togo.



Figure 1: Women processing mango

ii) Funding agency: this program is funded by USAID and USDA.



Figure 2: sliced mango ready for drying

iii) Results:

More than 20 proposals have been financed and about 80 more productive technologies have been delivered in the participating countries. Post harvest technologies reduced 20 to 25 % loss of fruit and vegetable and enabled the transformation of these commodities into value added products within the participating communities.

Training activities (crop and vegetable seed production, small ruminants fattening, post harvest technologies, book-keeping, cooperative management) have been conducted and allowed income and employment generation for farmers' associations, including women groups. In Burkina for example, a women association increase its production capacity and employment generation by over 50%.

Livestock integration and crop and legume rotation allowed not only income generation, but also soil fertility improvement.



Figure 3: multipurpose gas dryer used by community based organizations for processing mango and other agricultural products



Figure 4: women packaging dried mango

B.2. Title: The West Africa Small Grants Program (WASGP) in Nigeria

Objectives

The objectives of the West African Small Grants Program (WASGP) in Nigeria are to:

- Enable small holders farmers improve food productivity beyond their immediate household needs,
- Diversify farm income by identifying and linking market opportunities to smallholder farmers and food processing,
- Optimize the utilization of post harvest technologies to enhance the transformation of agricultural produce into value-added products and;

- Improve the nutritional quality of basic diets through food processing and formulations and improvement of technical skills

i) Activities: Activities undertaken under this program include capacity building of grassroots farmer organizations for: production and commercialization of improved planting materials; the production and transformation into value added products of agricultural produce (livestock, fish, grain, fruit and tuber); and the provision and administration of grants to facilitate such technology transfer and commercialization.

Participating Countries: The West Africa Small Grants Program (WASGP) in Nigeria derives from lessons learned from the USAID funded and SAFGRAD executed West African Program in Burkina Faso, Ghana, Senegal and Togo. Nigeria is therefore the sole beneficiary of this program.

ii) Funding agency: United States Agency for International Development (USAID)



Figure 5: Launching of the West Africa Small Programme-Nigeria at Tunjia Maje, near Abuja FCT, Nigeria

iii) Results:

During the 2001-2002 fiscal year, two memorandum of understanding (MOUS) were signed between OAU/STRC-SAFGRAD and the Institute for Agricultural Research of the Ahmadu Bello University (IAR/ABU), Zaria and the Institute for Agricultural Research and Training (IAR&T) of the O. Awolowo University respectively for the establishment of two Focal Units for the coordination of the program in Nigeria; two meetings of the National Technical Steering Committee comprising representatives from the Federal Ministry of Agriculture, National Agricultural Research Institutes (NARIs), the Agricultural Development Programs (ADPs), IITA and ILRI, the private sector, NGOs were held in August 2001 and April 2002 at IITA.

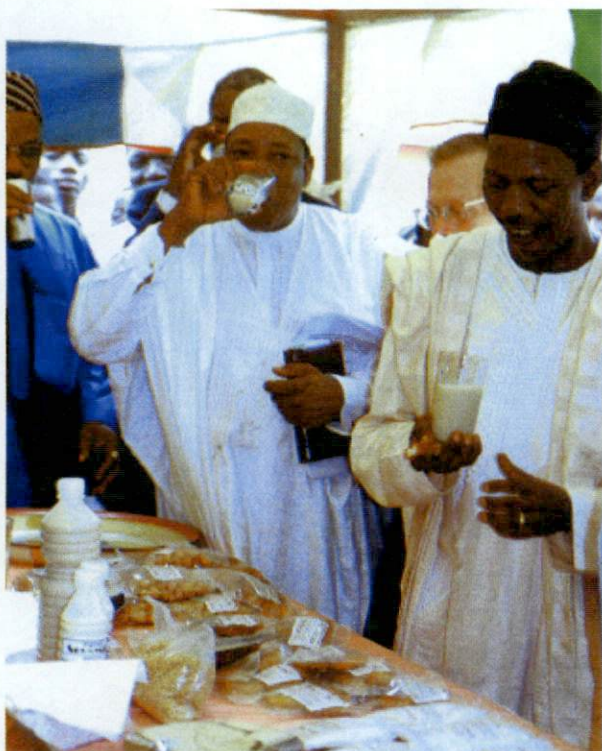


Figure 6: Soybean processing at community level: Officials sampling meals made by women groups at Tunjia Maje.

During these meetings a total of 19 proposals out of 96 submitted by local communities in the area of promotion of recently research developed technologies were approved for funding. Those proposals concern (1) post-harvest and farm produce processing technologies, (2) livestock and fisheries related production technologies and (3) seed increase and distribution of high yielding cultivars and multiplication of improved planting material. Funds were disbursed in favor of approved proposals from an account established by SAFGRAD in Nigeria, through the OAU/STRC Lagos office.



Figure 7: A working group at the NTSC meeting screening proposals



Figure 8: Participants at the April 2002 National Technical Steering Committee Meeting in IITA, Ibadan, Nigeria.

B.3. Title: Production Support and Financial Services (PSAFS) Program

During the past two decades of structural adjustment and market liberalization, African countries embarked on policies to reduce public sector participation in the provision of agricultural production support and financial services. Despite substantial investments in these policy reform programs, the transition from the public to the private sector has progressed at a very slow pace, leaving a void in the delivery of agricultural production support and financial services in Africa. Farmer access to these services has been severely constrained resulting in the decline in their productivity and competitiveness in local and regional markets.

Objectives:

- To develop a framework including principles for guiding efforts to strengthen production support and financial services;
- To develop, test and promote innovative options through strengthened partnerships and networks; and
- To identify and share best practices and provide program and strategy development options for enhancing production support and financial services.

i) Activities: Activities undertaken during the first part of the program implementation include: a) the establishment of National Working Committees (NWCs) on PSAFS; b) the conduct of PSAFS inventories studies; c) development of networks and partnerships through regular consultations and

dialogue among stakeholders including donors. National workshops have been organized to broaden the internal network to a national level of consultation and dialogue with other partners on issues and experiences on PSAFS. A regional stakeholders workshop was held in Accra in 2001 to assess progress of work and to share the results of country studies undertaken by NWCs.

During the year 2002, the program concentrated on the implementation of pilot activities (crop and vegetable seed production, land preparation and threshing services, micro-credit training for capacity building) in the five countries to test and promote the identified innovative options through strengthened partnerships and networks; identify and share best practices and provide program and strategy development options to USAID field Missions and African organizations supporting private sector production support and financial services. In addition, program newsletters and national PSAFS directories are being produced and will be released to different stakeholders.

Participating Countries: Ghana, Mali, Senegal, Uganda and Zambia.

ii) Funding agency: this program is funded by USAID and USDA

iii) Results: National working committees including representatives of all stakeholders have been established, inventory studies of PSAFS have been conducted in three countries and validated through national workshops. One regional stakeholders' workshop was held to assess progress of work. Crop and vegetable seed production is on going and training in seed production technologies, book keeping, cooperative management, micro-credit for capacity building are underway.



Figure 9: Potatoe seed producer in Sikasso, Mali

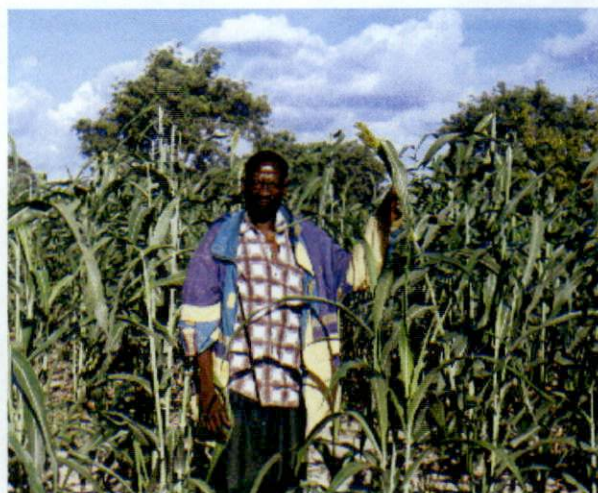


Figure 10: Sorghum seed producer in his field in Kolo-kani, Mali



Figure 11: Cowpea seed production and commercialization at community level, Burkina Faso

B.4. Title: Sustainable Agricultural development Program

Objectives:

- To improve the management efficiency of an integrated on-farm enterprises which can lead to the use and the recycling of on-farm resources and to concurrently induce both agronomic (biological) and economic complementarities between and among production systems;
- To access environmentally friendly, but more productive technologies to farms communities, in order to enhance the management of agricultural production and natural resources;
- To strengthen partnership among stakeholders including farmers, technology transfer agents, researchers, NGOs, the public and the private

sector, etc. to improve the fertility of the soil and to enhance the development of the sustainable agriculture; and

- To diversify sources of food security and income of farm households by linking agriculture to market sources and food industries.
- To Narrow the “yield gap” of performance of technologies between on-station and on-farmers field;
- To Identify agronomic practices that could minimize risks of crop failures due to environmental and socio-economic constraints.

i) Activities: The two components of the program are the Verification of Food Grain Production Technologies and On-Farm Resource Management. Using a participatory approach, on-farm verification trials concerning improved cereals and leguminous crop varieties were conducted in several countries. Main characteristics introduced include precocity (early and extra early maize varieties), higher yields (sorghum, cowpea, groundnut, and pigeon pea) and tolerance/resistance to Striga (maize in Cameroon). Farmer participatory quality evaluation was performed on most improved varieties.

On-farm, participatory agronomic, soil fertility and soil water management trials, were also conducted in Burkina Faso, Ghana, Nigeria and Senegal.

Participating countries: Benin, Burkina Faso, Cameroon, Cap Verde, Ghana, Mauritania, Niger, Nigeria, Senegal, and Togo.

ii) Funding agency: this project is funded by the African Development Bank through the African Development Fund.

iii) Results: all planned activities have been fully implemented and finalized by collaborating NARS.

These trials resulted in the identification of favorable cropping systems, fertilizer and organic matter application rates, and “soil water management/ fertilizer application” technology packages. The improved varieties out-performed farmers varieties and were favorably received by the participating farmers. Economic return studies and qualitative evaluation by farmers were also favorable. A diffusion of these introduced varieties in collaboration with participating NARS may already be envisioned in some cases.

On-farm participatory activities allowed substantive movement of more than 44 technologies from stations to farmers fields, and from some countries to others. As a result, more than 250 000 farmers were enabled access to a number of options for a better management of their land resources. In Togo for example, two new sorghum varieties (Sorvato 1 and Sorvato 28) were found by farmers to enhance food security and income.

To promote further integration of livestock raising within farms, trials on sheep fattening were conducted with farmers in Burkina Faso, Ghana, Nigeria and Senegal. These trials showed interesting Average Daily Gains and economic returns.

The Program activities also allowed several NARS scientists to initiate participatory work with farmers, thus creating favorable conditions to an increased dissemination and adoption of improved technologies and greater impact of research on agricultural productivity and sustainability.

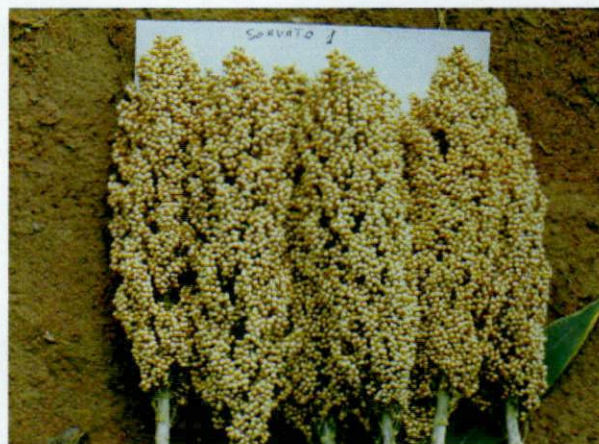


Figure 12: Head of sorvato 1



Figure 13: Farmer observing his harvest of sorvato 28



Figure 14: Farmers harvesting early maturing and drought tolerant cowpea at Taptenga, Burkina Faso

B.5. Title: Collaborative Striga Research and Control Program in Africa

Objectives:

The objectives of the on-farm Striga control program are as follows:

- To identify integrated Striga management technology packages that are feasible and economically acceptable for farmers.
- To increase awareness on Striga problems at community levels in order to facilitate Striga control in participating countries
- To strengthen the capabilities of national programs for Striga control activities through training and provision of needed financial and technical back-stopping
- To facilitate management, dissemination, and exchange of technical information among scientists, national programs and relevant institutions.

i) Activities: To develop and promote appropriate integrated Striga control technologies and ensure effective transfer of these technologies to farmers, a total of 136 on-farm adaptive trials and demonstrations were implemented in Benin, Cameroon, Côte d'Ivoire, Ghana and Nigeria. These demonstrations were undertaken by participating NARS in collaboration with farmers and extension services. The technology packages included Striga tolerant/resistant maize varieties, trap crop such as groundnut, cowpea, soybean and various agronomy practices (intercropping and or rotation with

legumes). Field days were organized to facilitate access of technologies and enhance further interaction among researchers, extensionists as well as participating and non-participating farmers in the community.

Participating Countries: Benin, Côte d'Ivoire, Cameroon, Ghana, and Nigeria.

ii) Funding agency: this project is funded by the Republic of Korea.

iii) Results: In all participating countries, Striga tolerant maize varieties generally out-yielded the local maize. In Benin, Cameroon and Côte d'Ivoire, variety trials allowed identification of new Striga tolerant maize varieties for release. In Cote d'Ivoire for example, Across 94 TZE Comp 5-W, Across TZE Comp 5-Y and IWD STR had better grain yield and less Striga emergence than farmers' varieties. In Benin and Ghana, Striga emergence was low, but the trend observed is encouraging as to the effectiveness of STR maize varieties in Striga control. The identification and dissemination of Striga tolerant varieties by itself could permit 20-30% grain maize production increase in participating countries. Economic analysis of the technologies also revealed that the improved technologies would yield higher net return under farmers' traditional mixed cropping system than local varieties. In general, farmers tend to rate the new varieties higher than their local ones, because of their perceived advantages, in terms of higher yields, Striga reduction and other attributes.



Figure 15: NARS, IARI (Republic of Korea) and SAF-GRAD scientists discussing striga control strategies with farmers in Cameroon



Figure 16: Prof Kim (IARI, Republic of Korea), NARS and SAFGRAD scientists visiting a trial in northern of Cote d'Ivoire a striga infested farmer's field



Figure 17: Scientists and farmers examining a striga plant

B.6. Title: Micronutrient Enhancement in maize, sorghum and millet based Staple Foods in Burkina Faso and Ghana

Objectives:

- Collect baseline information on micronutrient deficiencies
- develop a technology for the fortification of maize and sorghum meal with micronutrient at both the commercial and village levels;
- Transfer the developed technology to local food processors to promote the production and distribution of the fortified fermented maize meal;
- Assess the market demand and affordability for the fortified products.

i) Activities: Activities undertaken during the year include the collection and analysis of baseline data on micronutrient deficiencies. The development of a technology for the fortification of maize and sorghum meal with iron, vitamin A and zinc at both the commercial and village levels is underway particularly in Ghana.

Participating Countries: Burkina Faso and Ghana

ii) Funding agency: this program is funded by the International Development Research Center/ Micronutrient Initiative (IDRC/MI).

iii) Results: In Burkina Faso, more than 400 households and producers of infant food, mills, semi-industrial food processors have been surveyed. The results indicated that a significant proportion of individual surveyed presented signs for which a supplementation in iodine or vitamin A was necessary. Among these individuals are: nursing or pregnant women presenting a visible or palpable goiter, seriously malnourished children with chronic diarrhea and women who had declared a nocturnal blindness.

It was found that one of the vehicles to target for fortification could be baby food, which are produced by women associations in the target zone of intervention.

In Ghana, the assessment of micronutrient losses in maize during processing and cooking was performed with particular reference to Vitamin A, iron and zinc. Stability of added micronutrients in maize during processing was found to depend on factors such as temperature, method of preparation, length of cooking, and the processing technique. Also additional factors such as moisture content, light, pH of the system, oxygen, length of storage and packaging play a very important role in the stability of the product during storage.

A mixer was successfully designed and fabricated for use in micronutrient fortification of dehydrated fermented maize meal. The equipment is an automated motorized 20-kg capacity mixer/blender for blending premix micronutrients with flour. Technical details of the design and the operational steps are available at the Food Research Institute, Accra, Ghana.

CONCLUSION

For the fiscal year 2001/2002, OAU/STRC-SAFGRAD Coordination Office has achieved a substantial part of the results targeted in its annual work plan despite unfavorable conditions related to insufficient administrative and operational resources and uncertainties within some donor communities and partners on the SAFGRAD legal framework after the transition period from OAU to AU.

For sustained and more substantive results both in terms of coordinated and more vigorous response of Africa to the still on-going food insecurity and extreme poverty in many parts of the Continent, particularly its semi-arid zones, it is recommended to institutionalize and strengthen SAFGRAD by:

- Its full integration into AU institutional framework;
- Increasing its operational budget to allow more coordination of thinking and action at the continent level on issues related to food security and corresponding research needs; this will result in turn in more proposals and stronger relation with partners for resource mobilization.
- Making it one of AU effective and efficient arm for the implementation of NEPAD in the area of Agriculture through high political visibility and support

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